Price £5. 5. 0

MR. W. D. BOWKETT'S

PATENT

CLINICAL THERMOGRAPH

FOR

DETERMINING AND RECORDING ON PERMANENT

DIAGRAMS ALL VARIATIONS OF TEMPERATURE

OCCURRING IN ANY PATIENT DURING 24 HOURS.

SOLE LICENSEES

UNDER THE PATENT,

MESSRS. SALT & SON, 21, BULL STREET, BIRMINGHAM,

ANATOMICAL MECHANICIANS

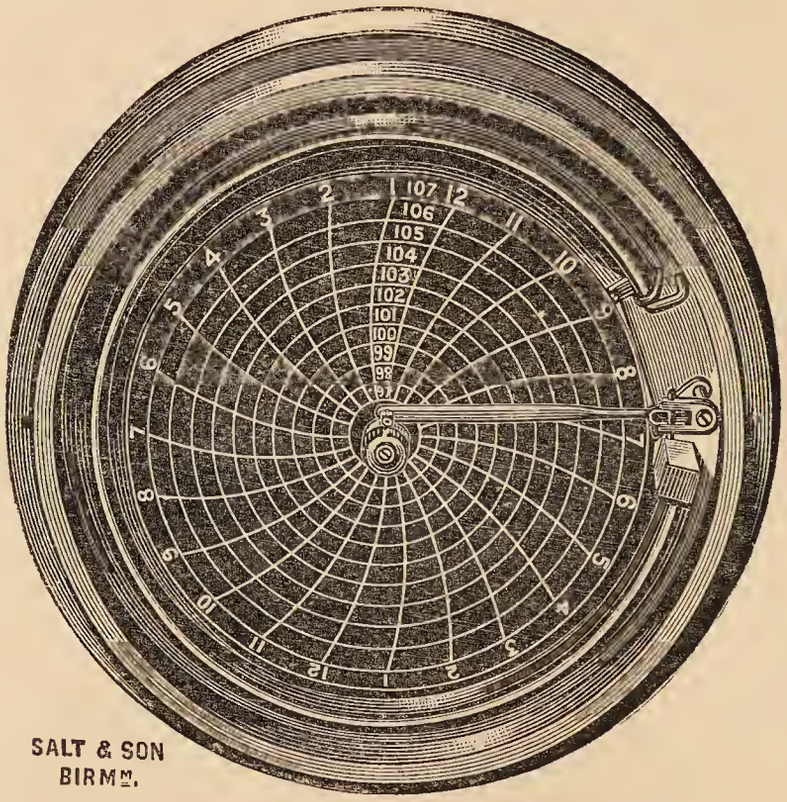
To H.R.H.

THE PRINCE OF WALES

DESCRIPTION OF A NEW CLINICAL THERMOGRAPH.

Invented by W. D. Bowkett, Esq., Medical Officer of the Leeds Fever Hospital.

This instrument, of which an engraving is given (Fig. 1), is the invention of Mr. Bowkett, of the Leeds Fever Hospital, who has bestowed much time and labour on its perfection, ably assisted latterly by Messrs. Salt and Son, of Birmingham, in whose hands it is now placed.



The principle involved in its construction is that of applying the pressure resulting from the expansion of a liquid in a closed chamber, under varying temperatures, for the purpose of recording these variations. The expansion produced in a given liquid by an increase of temperature is proportionate to that increase, and if its free expansion be restrained the resulting pressure is also proportionate.

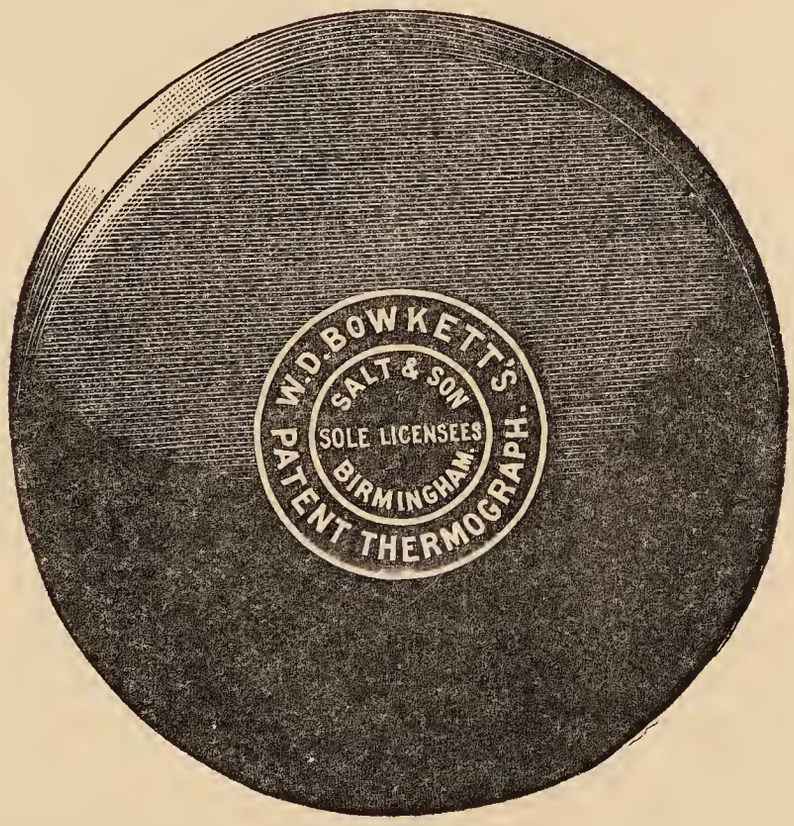
The thermal portion of the instrument consists of a metallic vessel, rigid and unyielding, about three inches in diameter, and one-third of an inch in thickness. In connection with this is a curved hollow tube or spring (seen towards the outer edge of the engraving), much smaller in size, but similar to that used in the Bourdon steam gauge. One end of this tube is fixed to the vessel, with the chamber of which it communicates; the other extremity is closed, and is in connection with a simple lever movement, increasing a first motion some three or four times. The whole is filled with liquid and hermeti-

cally sealed. Now any increase of temperature causes the contained liquid to expand. The vessel being unyielding, the expansive force influences the tube only, whose form renders it elastic, in such a manner as to cause the end in connection with the lever to recede from its position of rest, and the lever is thus moved upon the recording surface.

The recording surface consists of a dial or disc of card-board, set in motion by watch-work occupying the centre of the instrument.

The dial makes one revolution in 24 hours and is divided by concentric circles into degrees of temperature, and by 24 radial lines into spaces representing as many hours. The movement of the lever is from the centre towards the circumference; its extremity is armed with an arrangement for marking a legible ink line on the disc upon which it lightly bears, so that during its revolution a line is drawn whose position in reference to the concentric circles marks the temperatures, and in reference to the radial lines the times of those temperatures.

The lever permits of being lifted to allow of the disc being changed. The flat under-surface is applied to the body, the other portions being protected from injury by a suitable vulcanite case. (Fig. 2).

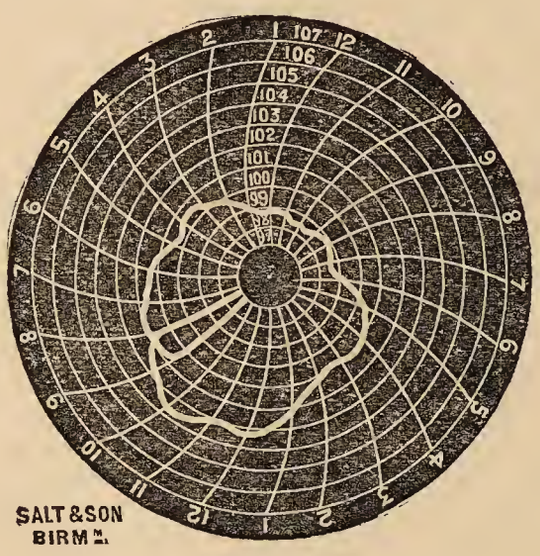


It is usually applied to the abdomen, being held *in situ* by a broad band of non-conducting material, which also serves to protect the instrument and the skin from being unduly influenced by external temperature variations.

Being filled with a comparatively incompressible liquid, it is not to an appreciable extent affected by barometrical changes.

Worn in the manner described it produces but trifling discomfort, and requires no constraint of position or movement.

A facsimile is here given (Fig. 3.) of a continuous record from a case of phthisis.



The abdomen is selected for its application on account of the ease with which it may be there worn. Necessarily the closure of the axilla for 24 hours would be fraught with extreme discomfort, even in health, while in many cases of sickness, such constraint would be unbearable. The record given by the abdomen while not always absolutely agreeing with the axillary temperature is yet sufficiently accurate for all practical purposes.

If, however, for purposes of research, &c., perfectly accurate records be required, it will be essential either that the instrument be worn in the axilla, or, if on the abdomen, that the hand be fastened over it, thus surrounding it by the tissues. The latter plan is by far the more comfortable.

It may be repeated, however, that these precautions are only requisite where great exactness is desired, and that for the detection of abnormal temperatures or abnormal variations the simple application by the broad band is sufficient.

It will be seen that its construction admits of much variation of design in size and shape. The range usually given it is from 97 to 107 degrees, but by varying the liquid with which it is filled, or the relative capacity between the tube and the chamber, the size of the degrees and the resulting delicacy or range may be increased or decreased at pleasure. —*Reprinted from Braithwaite's Retrospect of Medicine, July*, 1881.